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The Venereal Disease Situation in Canada*

INFORMATION AND RECOMMENDATIONS REGARDING THE CONTROL OF VENEREAL DISEASE IN CANADA ARISING OUT OF REGIONAL CONFERENCES OF CLINICIANS WORKING IN SPECIAL CLINICS

F. S. PARNEY, M.D.

Department of Pensions and National Health, Ottawa

IN 1930, the Department of Pensions and National Health, through its Venereal Disease Control Branch, reviewed in a general way the venereal disease situation throughout the Dominion. The information collected and the opinions of clinicians and others interested in anti-venereal disease work may be summarized briefly as follows:

While there is no definite proof of an increase in venereal disease incidence, neither is there reliable evidence of any decrease.

The marked increased attendance at free venereal disease clinics, instead of being taken as evidence of increased incidence of the disease, may be due, rather, to increasing confidence on the part of the public as regards the services rendered by these clinics. Unfortunately, this increasing confidence in clinic service is due largely to the advertising of the ex-clinic patient who, as a "satisfied customer" is (in this instance, through his own bitter experience) able to advise his friend in dire need where to go for help. It is still more unfortunate that at this time very little is being done either by means of public education or by more practical means to promote the *prevention* of venereal disease infection.

Hospital statistics show a decrease in cases of congenital syphilis among infants and, in adults, of terminal stages of neuro and cardio-vascular lues, while there is some increase in cases of the primary and latent stages. In neither instance, however, can the decrease indicated be attributed to a reduced incidence of the disease, but rather to earlier and more efficient treatment, due largely to the better education of the public. This also accounts for the increase in the number of patients reporting for treatment while the disease is still in the primary stage. On the other hand, the custom, now prevalent in most general hospitals,

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of routine serological tests has discovered numerous cases of latent syphilis which subsequent treatment has prevented from progressing to the terminal stage of neuro or visceral lues. This accounts for the increase in latent but the decrease in active tertiary cases being reported.

Undoubtedly in recent years our position as regards the control of syphilis has improved, but still further efforts on the part of the profession must be made if the weight of public opinion is to be enlisted in a progressive movement of education as to the prevalence, teacherousness, and far-reaching results of the disease and the need for early and prolonged treatment, which in turn will introduce a public demand for the rending of the "Hush, Hush" curtain behind which syphilis has for so long thrived, and the bringing to bear on this disease all the remedial agencies known to medical science.

At the opening session of the British Social Hygiene Council held last year in England, Lord Passfield expressed the opinion that, generally speaking, administration is far behind medical scientific discoveries with regard to the fight against venereal disease. Accepting this as correct, it also seems probable that the necessary stimulus to "administration" will have to come from the medical profession, particularly from those men who are devoting their time and thought to public health work.

Furthermore, the education of the rank and file of medical practitioners must not be overlooked or neglected. The men who work long hours in general practice have not the time to read and digest text books or lengthy articles in magazines each week or month on venereal disease alone, and therefore they should be furnished from time to time with details of the latest scientific treatment of syphilis in the shortest practical form. The members of the medical profession who are working in the smaller centres where they are called upon only occasionally to treat a case of syphilis, must be reminded of the dangers to the patient, his family, and the public of inappropriate or insufficient treatment on the one hand and too heroic treatment on the other.

The same applies with regard to the treatment of gonorrhœa. For some time back our leading urologists have been sounding a warning note against the too heroic methods of treatment of gonorrhœa adopted by many inexperienced practitioners; strong chemicals and unnecessary instrumentation having proved, in many cases, to have far more devastating effects than the original infection itself.

At the last annual meeting in London of the *Union Internationale contre le péril vénérien* this point was particularly stressed in a paper presented by Dr. Schraenen of Belgium, in which not only his own but the opinions of the leading urologists in Europe were expressed to the effect that in all large urological clinics on the continent far too many cases are there as the result of overly severe treatment of gonorrhœa.

With regard to this disease, we have not made as much progress towards control as we have in the case of syphilis. The laity still does

not realize the seriousness of gonorrhœal sequelae in men, women and children. Certainly there seems to be no evidence of lessened incidence. The general source of infection, *i.e.*, promiscuous sexual intercourse, is ever present but has shown the effects of altered social conditions; with the decrease in commercialized prostitution there has developed an increase in the ranks of the amateur and semi-professional operator. The same individuals who have contributed to this increase, however, would in all probability have repleted the wastage in commercialized prostitution, were that institution still flourishing.

At any rate, propagation of both diseases goes on at such a rate as to prove at times most discouraging to the clinician.

In view of the slow progress made in more than two thousand years in regard to controlling the source of venereal disease—that is, promiscuity—and having in mind the fundamental and unchanging sex urge in human nature, the immediate future does not appear to hold much promise of successfully attacking the problem at its source. Because public opinion, on account of the moral issue involved, will not endorse the teaching of prophylaxis at this time, some other methods must be employed, such as early post-exposure treatment and an increased effort along the lines of popular education.

These matters were placed before the Dominion Council of Health at their meeting in December, 1930. The Council considered it advisable that there be held a series of interprovincial conferences of clinicians actually engaged in the work of the free clinics, and that these groups be requested to submit suggestions and recommendations as to methods whereby the effectiveness of our anti-venereal disease machine might be increased. Accordingly, three such conferences were held; the first in Edmonton on May 4th and 5th, 1931, at which were representatives from the four Western provinces; the second in Montreal on September 17th and 18th, 1931, which was attended by clinicians from Quebec and the Maritime provinces; and the third at Toronto on November 16th and 17th, 1931, which was largely attended by clinicians working in the Ontario Government clinics.

Although these conferences were the first to be called in Canada for this specific purpose, it is interesting to note that the great majority of the attending clinicians expressed themselves as having long felt that such meetings would be of the greatest value, not only to themselves personally, but also to the success of this special branch of public health work. At all three regional conferences a resolution was passed expressing the opinion that arrangements should be made in each province for an annual meeting of the venereal disease clinicians in that province and that inter-provincial meetings should be held every three years.

The success of the first inter-provincial conference, which was by way of blazing a new trail, was largely due to the enthusiasm and organ-

izing ability of Dr. Harold Orr, Director of the Division of Social Hygiene for the Province of Alberta.

The programme arranged for this meeting was broad and comprehensive and was followed more or less closely by the two succeeding conferences. At each of the meetings the same subjects and problems were dealt with in papers and in open discussion. The resolutions which arose out of the discussions at any one conference agree so closely with those passed at the other two meetings with regard to the same subjects that it is obvious that the clinicians from coast to coast are in agreement as regards the essentials of our problem.

In the time available on this occasion it would not be possible to deal with all the phases of the subject discussed at the three conferences; therefore only those features of general rather than specific public health interest will be mentioned.

EDUCATION

The consensus expressed by the clinicians was to the effect that our present day medical knowledge of the cause, early diagnosis, treatment and prevention of syphilis is such as to permit of the rapid relegation of this disease to the comparatively inocuous status of smallpox or typhoid fever, provided public opinion would demand and support similar action against syphilis as it has done against the other diseases mentioned. The same would apply to gonorrhœa to a considerably less extent.

It was further agreed, however, that until the laity's ignorance of and aversion to open discussion of venereal disease be overcome, and still further, until the two elements of the problem—that is, the moral and the public health—be dissected out, carefully appraised, and set up in their proper rational relationship in the minds of the public, this essential support of public opinion would not be forthcoming.

Therefore, of fundamental importance in any anti-venereal disease campaign is the education of the laity. Accurate and sufficient information must reach them, old prejudices and false conceptions must be broken down, and the problem outlined in its true proportions.

The difficulty and delicacy connected with the preparation and presentation of effective educational matter in this regard is recognized, but in view of its vital importance and because of its difficult technique, this task should be given special consideration by departments of health and social hygiene organizations and dealt with as a special branch of anti-venereal disease work.

The clinicians did not deem it advisable to offer at this time any specific suggestions as to educational methods, but in order to record their opinion on the subject, unanimously passed the following resolution:

"We recommend that intensive venereal disease propaganda, by means

of lectures, moving pictures, literature and public addresses, etc., be continued with a view to still further enlightening the public as to the extensive existence and the devastating effects of venereal disease. Furthermore, we are of the opinion that concerted action is necessary, not only to lower the incidence, but even to control this public health menace."

FOLLOW-UP METHODS

In the course of the discussion on this phase of the problem it was agreed that a most important feature of any venereal disease clinic was an efficient social service branch. The personnel of this branch should have, of course, a sound training in social service work; and if, added to this, they possess tact and enthusiasm for the work, their services would undoubtedly be of tremendous value to the clinic and the public at large, not only in persuading patients to keep on with prolonged or repeated courses of treatment, but in locating and bringing to the clinic, contacts or disseminators of the disease.

It was pointed out that the necessity for social service work in connection with venereal disease is particularly important on account of the peculiar circumstances surrounding these diseases—the customary inference of immorality associated with their acquisition, the resulting natural desire to maintain secrecy, ignorance of the devastating results in improperly treated cases, all of which often prompt the infected individual to attempt self-treatment or to become careless as regards adequate treatment and hygienic precautions.

The overworked clinician has not the time to follow up delinquent patients or investigate contacts or sources of infection. In any effective effort to "control" these diseases, this phase of the work is most important and in view of the lack of popular knowledge and enforcement of strict public health regulations, the only instrument in existence available for performance of this work is the social service branch, which requires numerical reinforcement in most clinics.

In this connection, one point was particularly stressed; namely, the great importance which should be attached to the clinician's first interview with the patient. If at this meeting the clinician goes carefully into the patient's history, explains the nature of the disease, and outlines the nature of the treatment indicated and the necessity therefor, he will undoubtedly gain the patient's confidence and co-operation throughout the prolonged period of treatment.

This point was considered of such importance as to warrant the passing of the following resolution:

"That with a view toward the encouragement of continuous attendance by venereal disease patients, great emphasis be placed upon the importance in educational value of the first interview between the clinician and his patient. This interview should be made the opportunity for full explanation of the disease, its communicability and dangers, and

> the need for continuous and faithful treatment for a specific period or periods. This would necessitate an increase in the number of clinicians in large clinics."

The preventive side of the problem was discussed at considerable length and it was agreed that it was not feasible at this time to advocate prophylaxis, but that the next best preventive measure was early post-exposure treatment, which is not only practicable but essential if we are to have any hope of lowering the incidence of venereal disease.

In accordance with the view expressed, the following resolution was recorded:

> "That this meeting is of the opinion that there is no doubt about the efficacy of early treatment (within eight hours after exposure) in lowering the incidence of venereal disease. This group is of the opinion that the practice of administering early treatment should be instituted in all Canadian venereal disease clinics. To be practical this will necessitate keeping clinics open and adequately staffed both early in the morning and late in the evening (8 a.m. to 12 p.m.).

Another feature discussed at considerable length was fever treatment in neuro-syphilis. One phase of this subject is of interest from the administrative as well as the clinical standpoint.

The efficacy of induced hyperpyrexial treatment in neuro-syphilis was agreed upon and the majority opinion considered the malarial infection method of induction still the more generally suitable, but in this connection it was pointed out that nowadays neuro-syphilis is frequently diagnosed and malaria therapy therefore indicated long before any signs of mental deterioration are apparent. However, at the present time the only institutions in which malaria therapy is available are hospitals for the insane, and many individuals requiring this treatment hesitate or decline to become registered patients in a mental hospital.

Such a reaction is not altogether unnatural, and there is no scientific reason for limiting the administration of this treatment to mental hospitals when it is obvious that there are good and sufficient reasons why the treatment should be available in any well staffed general hospital.

Accordingly, the unanimous opinion was recorded in the following resolution:

> "That facilities for giving malaria treatment be provided in all large general hospitals with the idea of thus preventing many cases from ultimately becoming public charges in mental hospitals."

In considering the problems presented by gonorrhœa, it was pointed out that in many chronic or complicated cases hospitalization (often for only a short period of time) was very definitely indicated, either in connection with making a differential diagnosis or administering special

treatment. But bed accommodation for such types of cases is difficult to obtain in most general hospitals. Strong views were expressed on the necessity for the provision of such accommodation and recorded in the following resolution:

> "That every large clinic have a certain number of beds reserved for the accommodation of its 'G.U.' patients."

The result of further discussion in regard to the gonorrhœa situation is indicated in the following resolution, which was unanimously passed:

> "That clinicians are of the opinion that the teaching in our medical schools should be improved and extended with regard to gonorrhoea, as an ever-increasing number of patients are turning up at 'G.U' clinics showing the effects of mal-treatment of this disease."

Another branch of the work commented upon and highly commended was that now being done in the ante-natal, obstetrical and child welfare clinics. It was recommended that this highly important phase of anti-venereal disease work be encouraged, aided and extended.

To summarize briefly the general opinion expressed by these special clinicians, it may be said that so far as the control of venereal disease is concerned we are barely holding our own, except insofar as the later stages of syphilis are concerned. There is no evidence whatever of any decrease in incidence; on the contrary, certain features of modern life even suggest that there may be a considerable increase. During the last calendar year there were treated in the free clinics throughout the Dominion more than 50,000 individuals.

Although there is an increasing attendance at clinics, due largely, we believe, to increasing knowledge and confidence on the part of the public, the hours during which most clinics are open are unfavourable to the working patients; consequently, many of the latter drift away or neglect treatment as soon as the acute symptoms of their disease disappear. This allows for recurrences and further dissemination of disease.

In the absence of an enlightened public opinion, which is an absolute necessity if we are ever to solve our problem, the one method available at this time by which the incidence of venereal disease may be cut down, is the early post-exposure treatment. Notwithstanding the fact that it is forty years since Metchnikoff gave to the world his dramatic demonstration of the efficacy of calomel ointment as an actual preventive of syphilis, no adequate practical application of this humanitarian discovery has yet been made. Truly, prejudice and ignorance in this field must be held responsible for an appalling amount of unnecessary suffering since that time. To provide for early treatment and at the same time extend the clinic hours to accommodate the working patient would require additional clinicians, staff and expenditure of public funds.

The venereal disease clinics do not hold out for the student or young practitioner, the glamour of the operating theatre or the interest attached to some other more lucrative or otherwise attractive branches of medicine! Consequently it is becoming increasingly difficult to enlist the services of younger men on clinic staffs. The older clinicians, whose interests are centred in the treatment of venereal disease, are already giving more of their time and energy to the clinics than they can afford, either with no remuneration at all or for a nominal honorarium. No other class of workman, from professional man to labourer, has ever given of his time and knowledge to the public weal to the same extent as has the medical profession; and a reaction is now under way. Medical men are beginning to feel that they should receive fair remuneration for public service, as do men in other fields.

Venereal diseases are very definitely social diseases and the problem they present is decidedly a public health one. The responsibility for dealing with it rests, therefore, with governmental public health organizations. If we are to eliminate the venereal disease scourge, justice must be done to the public in the way of education and placing facilities for treatment and possible prevention within the reach of all. At the same time, justice must be done to the medical men who are actually doing the work, and a fair remuneration awarded to them.

In view of the present *laissez-faire* attitude of public opinion toward venereal diseases, these cannot be handled in any way similar to other communicable diseases, and the problem which they present is more national and less provincial in its aspect than any other public health problem. Therefore it is felt that the Federal Department of Health should very largely lend its aid to the provinces, not only along the lines of education and propaganda, but also in a financial way.

Reports on the proceedings of the three conferences were submitted to the Dominion Council as requested, and after due deliberation that body at its 23rd meeting held in Ottawa on December 14th, 15th and 16th, 1931, passed the following resolution:

> "*Whereas* the venereal diseases are prevalent and widely distributed in Canada and,
>
> *Whereas* the interest of the Government of Canada, through the Department of Pensions and National Health, indicated by money grants, publications and highly trained personnel, has been very helpful to the provinces of Canada in venereal disease control, and
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> *Whereas* three meetings of venereal disease specialists in Eastern, Western and Central Canada have been held, and from these meetings have come resolutions deserving our most serious consideration:
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> *Therefore, be it resolved* that the Government of Canada be commended on account of what they have already done, and requested to increase their contribution so that

(1) More clinics may be opened;
(2) More personnel may be made available for service in these clinics;
(3) That clinic personnel may be reasonably remunerated, especially by giving time and facilities for study and methods of treatment;
(4) That the hours of treatment in clinics be extended to provide morning and evening hours for early treatment, and also that working people may obtain treatment in hours off duty;
(5) That facilities may be provided for the treatment of infected persons (especially women and children) living in sparsely settled areas of the country;
(6) That the matter of reporting and following up venereal disease cases be given special attention;
(7) That the staff of the Department of Pensions and National Health engaged in venereal disease control be instructed to maintain and increase their efforts to assist the provinces in this connection.

Further, be it resolved that provincial governments be urged to increase their grants for venereal disease control, to revise their venereal disease programme in the direction of both efficiency, economy and better administration of practical measures for venereal disease control:

And also be it resolved that the teaching faculties of our medical schools interest themselves to a greater extent in training students to this work.

In conclusion, to sum up the situation, it is quite apparent that we are still a long way from the solution of the venereal disease problem. When in the course of the years that solution is evolved, it will necessarily include an altered viewpoint on the part of the laity as regards this scourge. The age-old erroneous attitude of considering the disease as a badge of shame, a just punishment meted out by nature for contravening her laws, and therefore something to be acquiesced in, must soon or late give way to the world-wide recognition that venereal diseases are *preventable*. And if only for the humanitarian reason that their blight settles upon the innocent, as well as upon the morally delinquent, the time must come when an enlightened and unprejudiced public opinion will demand that the problem which they create be attacked in a common-sense as well as scientific manner, looking toward their complete eradication.

In the meantime, while social service workers, both medical and lay, are hampered by this barrier of unenlightened prejudice, the immediate next step would appear to be to concentrate upon progressive education, at the same time providing more extended free facilities for early post-exposure as well as curative treatment.

Maternal Mortality*

H. B. VAN WYCK, B.A., M.B., F.R.C.S. (C.)

Assistant in Obstetrics and Gynaecology, Toronto General Hospital;
Senior Demonstrator in Obstetrics and Gynaecology,
University of Toronto.

THE problem of the high maternal mortality in this country, as in others, may be approached and discussed from a large number of viewpoints.

The medical educationalist is viewing with alarm the implications that may be made with reference to the comparison of countries where midwives are employed with countries such as our own where licensed physicians attend childbirth. The explanation of the paradox, which apparently is in favour of the use of midwives, is not that midwives are more efficient than properly educated practitioners of medicine, a conclusion that some hasty observers hold, but that medical education in this country is not producing physicians properly equipped for obstetrical practice. This one conclusion is resulting in a movement of educational reform and will bear fruits when improvements in undergraduate and, more especially, post-graduate education are brought about. The essential change will be making a compulsory post-graduate internship of at least six months on an obstetrical service.

Another point of attack is that of general medicine in preventing patients whose constitutional defects render childbirth unduly hazardous, from attempting it. The patients who begin pregnancy with serious cardiac, pulmonary and renal defects contribute inevitably to the mortality rates. These must be protected by birth control and more radical procedures when necessary, and this is the province of preventive medicine.

At present, however, I propose to discuss the relationship of public health organization to this problem. The advances in public health have contributed to the control of mortality from many other causes, but as yet have influenced mortality from childbirth very little, if at all. I would suggest that organized public health could make a contribution to lowering maternal mortality in the following ways:

1. By providing proper statistical information. The question which requires determining is the influence of hospitalization. We all recognize that the grouping of parturients together constitutes a menace from infection and that this is rendered negligible only by the greatest precautions. In this regard the inefficient small nursing home, the so-called maternity hospital, cannot safeguard its patients because its facilities are limited and its staff often badly trained. A proper yearly survey of deaths from sepsis and, better still, the morbidity rates as

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taken from the temperature charts, would at once indicate where conditions endanger the public. I believe it would mean closing the doors of many an institution at present tolerated under the abused term "hospital."

And again, when two related cases of puerperal sepsis occur, a proper survey would and should enable the local health authorities to strike at the cause; in the case of an institution, close its doors; or, in the case of an epidemic of puerperal sepsis out of hospital, take measures analogous to those taken in other infectious outbreaks. Two related cases of puerperal sepsis constitute an epidemic.

Information of this kind obtained through public health sources would show where the dangers exist and would, I believe, indicate that only in properly equipped and staffed hospitals are patients safe from the dangers inherent in such congregation.

It would also result in a superior type of hospitalization where obstetrical patients are kept completely isolated from all other phases of general hospital activity. It would lead to the abolishment of grouping such patients in public wards; public wards, if by that we mean several persons in a room, are a survival of medievalism. It remains for the Provincial or Dominion Department of Health to prove to what extent these principles are true. The result of such information would of necessity mean control of epidemic sepsis and hospital reform.

A second function of organized public health is the control of propaganda. The public receive their opinions from a variety of sources; the most powerful of these for good or evil is the press. I am far from advocating a muzzled press. The thing is unthinkable and would be a retrograde step. But when we read the pronouncements of irresponsible medical opinion; for example, that radium has no place in the treatment of cancer—a statement made to a responsible body and spread by our press from coast to coast—when we read this and know that it will result in depriving the misled readers of life and hope, we are justified in censuring the press and accusing it of a pernicious act.

One might multiply this instance many times and on no subject has the press given more misleading information than on the subject of this paper. Place the blame where you will, the result of a recent controversy in this city was to spread harmful and incorrect propaganda, terrifying to the public and obstructive to the efforts made by our profession to deal with the very problem the press claimed to assist.

A third contribution that can be made by public health is the providing of prenatal clinics and the care of the indigent patients.

To make this effective, that the indigent patient receive adequate maternal care, a maternal welfare organization under public health auspices is becoming inevitable. For this, legislation is required essentially to place on the father the responsibility of providing proper care for the expectant mother. He must see to it that this care is provided, whether by a private physician or the public clinic and hospital. In

the case of indigents, compensation must then be given to either the private doctor, as at present does not obtain, or to the hospitals. This involves making pregnancy a reportable condition. In this way and in no other can we force adequate care on all.

The only alternative to the municipality and province compensating the doctor would be to force all indigents or semi-indigents into the hospital. This increases the cost and fills the hospital with normal cases which would be much more efficiently treated at home. This, however, will require the use of public funds and two problems then arise:

(1) To see that adequate care is given;

(2) To see that the community assists financially only those who are unable themselves to pay.

These difficulties can be met by a proper control exercised by:

(1) The municipal relief office;

(2) A central board who pass on the forms filled out by the attending physician or clinic.

The maternal welfare clinics established where advisable by the public health department would be staffed by the local physicians in turn and thus the clinics, instead of being at variance with the local profession, would work in harmony with them. A proper supervision of those indigents claiming compensation would prevent pauperization. In no other way can adequate care be made compulsory for all.

Such is the sum of the contribution that can be made by public health. But it would have an appreciable influence in reducing maternal mortality. This is a matter largely of organization.

The other great urgent need is more efficient medical education, and this is in the power of the teaching institutions. Better education will result in more conservatism, which means better obstetrics; and while this is a matter for the individual obstetrician and not for the public health official, I feel that it is not unfitting to discuss here what must be accomplished in medical education.

I will not pause to emphasize the value of prenatal care. In that, with all the organized forces at work to advertise it and its benefits, this country is not deficient. Prenatal care will successfully reduce mortality from toxaemias and allied conditions. Deaths from hyperemesis and eclampsia need almost never occur if the patient is under efficient prenatal supervision. But toxaemias cause only a third of the total maternal mortality and, of the remaining two-thirds, the deaths due to sepsis, obstructed labour, haemorrhage and the other dangers attendant on childbirth, can be reduced only by the conservative conduct of labour. I do not feel that it should be necessary to discuss the value of surgical cleanliness. This should not need discussion.

The ideal is absolute aseptic technique attainable perhaps only in hospital, but our duty to approximate it as far as is humanly possible, no matter in what environment, is quite clear; and when we realize that

one-third of our mortality is due to sepsis, any further emphasis on this point would be superfluous. Surgical technique is a mechanical routine thing beyond controversy and its relation to the preservation of life in childbirth established.

But the application of conservatism is the part of our problem difficult to learn and arduous to apply. It is the mature fruit of experience, and its essential principles involve our whole conception of the conduct of labour. Any obstetrician knows what it means. It means the conduct of labour, by which the patient receives the maximum degree of help with the minimum degree of risk and injury. It means the avoidance of unnecessary radical interference, unnecessary anaesthetic, the conservation of strength and anatomical integrity, and the preservation of the future physical and functional capacity of the patient.

Labour conservatively conducted in this sense, in my opinion, will do more to reduce maternal mortality than anything else. To be specific, one must consider the proper application among our various procedures of operative interference; for example, Caesarian section, forcep extraction, the use of narcotics and anaesthetics, the various types of version, the treatment of the third stage, the use of pituitrin among the many artificial devices which man has evolved to meet the pathological character of this old physiological function.

The first stage of labour is the stage of dilatation, and until that dilatation is complete no efforts at delivery should be made. Forceps in the first stage inevitably damage the mother and usually the child. Before the onset of labour one can usually determine whether or not delivery through the natural passages will be possible. The previous obstetrical history in multiparas and the absence of disproportion in a primipara, as seen by the relation of the foetal head to the pelvis, will determine that possibility. Where in a primipara the engaged head leaves that possibility in doubt, observation of the progress made in the early stages of labour will determine the rare cases where Caesarian section is necessary. Having decided that delivery through the pelvis is possible, one must treat the first stage expectantly in spite of the time factor and the misguided solicitation of the patient and her relations for interference. Too much importance should not be placed upon the life of the child. We are justified in allowing this to influence us in the choice of Caesarian section only where, in elderly primipara, a stillbirth means in all probability a childless future. Properly to conduct a long first stage we must remember the need of the mother for rest, relief of pain consistent with a safe outcome, and food and fluids, and in this instance the public must be taught the value of a policy of non-interference.

With the onset of the second stage the problem changes. Here the indications for interference are definite—maternal or foetal exhaustion. Here forceps or pituitrin have a proper use, within the rule that forceps should never be used except for a reason intelligible to an intelligent

human being, and pituitrin should not be used except for uterine inertia in the absence of all obstruction.

Conservatism applied to the third stage means the avoidance of unnecessary anaesthetic and of all attempts to expel the placenta until the normal mechanism of separation has taken place. Abuse of this rule favours haemorrhage and sepsis.

These are the most important principles of conservatism, and yet we, the medical profession, find them difficult to apply, not because we do not know the straight and narrow path of obstetrical safety, but because of the many influences tending to lead us from it—anxiety for the child, pity for the suffering of the mother, fear of criticism from the patient and her family.

The qualities we must develop to offset these influences which obstruct us in our efforts to lead our patient from the valley of the shadow are courage based on knowledge not foolhardiness, patience arising from experience, and independence of judgment unaffected by irresponsible comment.

The most striking and tragic example of departure from the proper conservative attitude is to-day the tendency to do unnecessary Caesarian sections. This epidemic has not as yet swept Canada, but to the Caesarian section problem we must as a profession take a definite stand. We must convince the public that, although it is oftentimes easier for both patient and doctor, and ensures the survival of the child in most cases, it is attendant with sufficiently greater risk than natural labour that we will perform it only when we believe a successful outcome is otherwise impossible. The immediate mortality of elective cases is at least 2 per cent under the best conditions and the remote disadvantages are impaired fertility and the prejudice of subsequent pregnancies.

The maternal mortality rate will rise wherever Caesarian section is done on insufficient indications. I have dealt with many of the phases of the problem of maternal mortality and, to sum up, I find the solution in part in the cooperation of organized public health in enlarging their powers:

(1) To more supervision of the actually occurring mortality and morbidity and a greater power and control over hospitalization; and

(2) For a maternal welfare organization which, enforced by proper legislation, makes adequate prenatal, intranatal and postnatal care of all compulsory. This must be done by placing the moral and financial responsibility on the parents and the care of indigents on the whole community, where it belongs.

The remainder of the problem rests with the medical profession who must, by improved education, learn when to use and when to refrain from using the various methods with which ingenious man has provided himself—weapons which are indeed two-edged.

The Use of Hydrocyanic Acid for Fumigation Purposes

C. L. WILLIAMS

Senior Surgeon, United States Public Health Service, Rosebank, Staten Island, New York

Dr. Richard Felton, Medical Officer of Health for Victoria, B.C., in a letter to the JOURNAL requested authoritative information on certain problems of fumigation. The Editorial Board is indebted to Dr. Williams and to the Surgeon-General for permission to publish Dr. Williams' reply. The points at issue were: (1) relative time of exposure for calcium cyanide and Zyklon; (2) relative exposures in a properly constructed fumigation chamber and in an ordinary room reasonably sealed; (3) relative exposures of each commercial product for various insects; (4) reasonable time for diffusion or dispersion of HCN after fumigation; (5) means of hastening dispersion; and (6) toxic symptoms.

WHILE fumigation for the destruction of vermin is a practice that is steadily growing, the dissemination of knowledge concerning it has not kept pace. Most of the publications of recent date deal with specific types of fumigation and are largely designed to be read by those already familiar with fumigation processes in general.

To set forth in any reasonable detail fumigation procedures would require much time and space, so that I must confine myself to the points raised by Doctor Felton, and to these, I fear, rather briefly.

The cyanide fumigant that may best be used as a comparative unit is liquid hydrocyanic acid. This at present is obtainable about 98 per cent pure and is utilized by spraying under pressure into the compartment to be fumigated. Evaporation is practically immediate, so that a full concentration of the gas is obtained at once. With all other cyanide fumigants, evolution of the gas is slower, so that all of it does not appear in the air until from ½ hour to 2 or 3 hours after beginning the fumigation. Liquid HCN, however, should be used only by thoroughly competent and well-trained fumigators.

Many of the difficulties attendant upon handling liquid HCN are obviated by using the solid fumigants, the principal ones in present use being Zyklon and Zyklon discoids and calcium cyanide. The two former are made up of liquid HCN absorbed in an inert material, from which it evaporates completely in from ½ to 2 hours when spread out on the floor of the space to be fumigated. At temperatures above 80°F. (boiling point of HCN), more than 90 per cent will have evaporated within half an hour.

Calcium cyanide produces hydrocyanic acid by absorbing moisture from the air, with which it reacts chemically to produce HCN and $Ca(OH)_2$. The reaction is to a small extent reversible, so that the

residue immediately after fumigation contains a small amount of cyanide, which requires a number of hours' airing to completely remove. This is not true of either of the Zyklon products, the residues being practically innocuous.

Commercial calcium cyanide is at present supplied in two grades. One, manufactured by the Calcyanide Company of New York, under the name of Calcyanide, contains approximately 85 to 95 per cent. The other, manufactured by the American Cyanamid Company of New York, under the name Cyanogas, contains about 45 to 50 per cent calicium cyanide. It will be seen, therefore, that from the former twice as much gas will be produced per pound as from the latter. The speed with which the gas is evolved from calcium cyanide depends largely upon the thinness with which it is spread. When blown in as a powder, maximum concentration in the air is produced within an hour. When spread on the floor, however, this does not occur for two or three hours.

The amounts of gas necessary to kill vary very considerably indeed with the different insects or animals that it is desired to destroy. Mosquitoes are extremely susceptible and are killed by concentrations that are practically sublethal for rats. On the other hand, cockroaches are difficult to kill and require about four times as much gas as is generally used to destroy rats. The length of exposure required also varies quite as markedly. A half an hour is long enough for mosquitoes, while four hours is generally employed for cockroaches and other insects hard to kill. The following standards are set forth for some of the more usual vermin, based on the use of liquid HCN or either form of Zyklon as a fumigant:

To kill mosquitoes.....	½	oz.	per	1,000	cu.	ft.	Exposure ½	hour
" " fleas.....	1	"	"	"	"		" 1	"
" " bedbugs.....	4	"	"	"	"		" 2	"
" " rats and mice.....	2	"	"	"	"		" 2	"
" " lice.....	4	"	"	"	"		" 2	"
" " cockroaches.....	8	"	"	"	"		" 4	" *

*This insures a complete kill. To kill 95 to 99%, 4 oz. for 4 hours is sufficient.

If the space cannot be well sealed, loss of gas will be too rapid to use exposures longer than two hours to advantage. It is exceptional that HCN can be retained in effective concentration longer than 6 hours, except in specially constructed fumigation chambers. The above standards are based on reasonably tight closure of the space fumigated. To make most buildings gas-tight, however, is extremely difficult, and only experience can teach fumigators when it is safe to reduce dosage and depend on lengthened exposure. The general rule in such cases is to lengthen exposure in somewhat greater proportion than the dose is reduced. For example, for rats, if the exposure is made 4 hours, the dosage may be reduced to 1¼ ounces. It should be appreciated that every fumigation presents its individual problems and that the amount of gas required and time of exposure will be materially affected by such

factors as presence of absorptive material (bedding, moist material, stored goods, etc.), presence, utilization and penetrability of protective harborage, degree of gas tightness, atmospheric conditions (particularly wind and temperature), etc.

Calcium cyanide is generally computed to deliver about 55 per cent of its weight as HCN. Therefore, using a relatively pure product, one would theoretically employ about twice as much of this fumigant as of liquid HCN. However, the slower rate of evolution renders it somewhat less effective over equal exposure periods, but the slower evolution permits, and in fact requires, longer exposures, which increases effectiveness (within limitations imposed by leakage and/or absorption).

Applying these considerations to the above standards, when Calcyanide is employed the amounts used should be doubled and the exposures lengthened one hour in each instance. When Cyanogas is used, the amounts should be quadrupled and the exposures lengthened one hour.

The use of a specially constructed fumigation chamber permits reducing the dosage, the reduction being compensated for by prolonging the exposure. It is not well, however, to reduce the dose more than half. Compensatory lengthening of exposure should be in proportion to reduction of the dosage. For example, if the dose is reduced by half, the exposure should be doubled. When fumigation chambers are completely or nearly completely filled with material to be fumigated, however, a large proportion of the gas is absorbed thereby, so that the full dosage must be used to compensate for this loss. The real advantages of fumigation chambers are: safety; concentration of articles to be fumigated in a small space; accuracy, and reliability. In commercial practice, quite large doses and long exposures are regularly used to definitely insure complete penetration. Penetration into very dense materials, such as cotton bales, baggage, etc., practically requires the use of a vacuum chamber.

The effectiveness of any fumigant in destroying insect pests is largely dependent on the temperature. At temperatures below 45°F., many insects will not be killed at all. Satisfactory results can be secured at 65° F., but the optimum temperature is 75° F. or higher.

Hydrocyanic acid in concentrations of 2 ounces per 1,000 cubic feet or less is usually rapidly dispersed. When a fumigated room can be opened on both sides, it will nearly always be clear of gas in an hour. When only a single opening can be utilized, however, this period may be longer and is apt to vary considerably, depending very largely on outside atmospheric conditions, particularly movement of the air. As the concentration is increased above 2 ounces, clearing of the gas takes progressively longer, although with the greatest amounts used in any ordinary fumigation, ventilation from two sides should clear the fumigated room or building within two hours. Experienced fumigators can determine by the sense of smell whether the gas is present in dangerous

amounts or not. Other means of testing are by introducing animals such as white rats or cats, or by using chemically prepared papers.

The principal danger in clearing, however, is not so much the gas in the air in the fumigated space as the gas that has been absorbed into articles such as bedclothing, particularly mattresses and pillows, and into any moist articles. When concentrations of 2 ounces per 1,000 cubic feet or higher are used, danger from gas so absorbed is very real, numbers of fatalities having resulted therefrom. Two types of accidents appear,—one when persons have reclined on bedding in which gas is retained, the other when a room apparently free has been closed and a lethal concentration has later appeared in the air from gas evolved. Both of these are usually associated with a low temperature during ventilation and the latter often with a rising temperature inside the room after it is closed. These can be obviated by airing overnight, or more quickly by raising the temperature to 75°F. during aeration. If this is not practical, objects likely to have absorbed gas should be removed into the open air for at least two hours. Agitation by shaking or beating hastens the removal of retained gas.

When mechanical blowers are available, they may be utilized for clearing out fumigated spaces. As a rule, they are more effective if they can be placed inside with the conduit tube leading into the open air. Fumigation chambers are practically always equipped with mechanical ventilation. Mechanical agitation of the air also tends to increase penetration.

The symptoms of poisoning with hydrocyanic acid vary with the dose. A man walking into an atmosphere heavily charged may take but one or two breaths and fall unconscious. When a low concentration is breathed, however, usually the first sign is weakness, next a feeling of confusion with difficulty in breathing. When a sensation as though the chest were being clamped so that it can not be expanded appears, loss of consciousness is very near. In many subjects, following the first sensations of weakness nausea appears, which not infrequently produces vomiting. Headache is a common symptom, but usually is an after-effect.

Programme

LABORATORY SECTION MEETING

CANADIAN PUBLIC HEALTH ASSOCIATION

ROYAL YORK HOTEL, TORONTO, December 28, 1932

Section Officers

Chairmen:
DR. G. B. REED (retiring), Queen's University, Kingston.
DR. N. MACL. HARRIS, Laboratory of Hygiene, Ottawa.

Secretaries:
DR. A. L. MCNABB (retiring), Dept. of Health, Ontario.
DR. M. H. BROWN, Connaught Laboratories and School of Hygiene, University of Toronto.

Morning Session 9.30 a.m.—Private Dining Room No. 10, Main Mezzanine Floor.

"Bacteriophage in Acute Intestinal Infection"—Dr. Marion M. Johnston, Hospital for Sick Children, Toronto.

"Vaccine Treatment in Rheumatoid Arthritis"—Dr. W. D. Hay, Department Bacteriology, Queen's University, Kingston.

"Skin Sensitivity in Immunes to the Elementary Bodies of Vaccinia"—Dr. J. Craigie, Connaught Laboratories and School of Hygiene, University of Toronto.

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DEMONSTRATIONS
(Time not exceeding five minutes for each)

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"Diphtheria Immunization"—Dr. A. L. McKay, Director, Division of Preventable Diseases, Department of Health, Ontario.

"Echinococcus Infection, with Case Report"—Dr. W. J. Deadman, Hamilton General Hospital.

"Variation in Cl. Welchii"—Dr. J. H. Orr, Department of Bacteriology, Queen's University.

Luncheon—1 p.m.—Private Dining Room No. 9.

Speaker—Dr. W. J. Bell, President, Canadian Public Health Association; Deputy Minister of Health, Ontario.

Afternoon Session 2.45 p.m.—Private Dining Room No. 10.

"Scarlet Fever Toxoid"—Dr. Milton V. Veldee, Surgeon, United States Public Health Service, Washington.

Discussion, to be opened by Dr. D. T. Fraser, Connaught Laboratories and School of Hygiene; and Dr. A. L. McKay, Director, Division of Preventable Diseases, Department of Health, Ontario.

"Agglutination Results in Enteric Infections"—Dr. George Shanks, Toronto Western Hospital.

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Demonstrations

The following demonstrations have been arranged and others will be added as offered by members:

Methods of blood culture (Dr. W. B. McClure).

Scarlet fever antitoxin titration (Dr. Frieda Fraser).

Presumptive Kahn test (Dr. A. L. McNabb).

Special stain for C. Diphtheriae (Dr. W. M. Wilson).

Nomogram for dilutions (Dr. J. Craigie).

* * * * *

A cordial invitation is extended to every member of the Association to attend the meeting. More than sixty-five have already indicated their attendance, including members from Kingston, Montreal, Ottawa, Guelph, Fort William, Peterborough, North Bay and London.

Editorials

FUMIGATION WITH HYDROCYANIC ACID

THE rapid increase in the use of hydrocyanic acid as a fumigant for dwelling houses in the larger cities of this continent is a cause for real concern, on account of the ease with which fatal accidents may occur.

Formerly only two chemicals were commonly employed in fumigation—formaldehyde and sulphur. Health officers are familiar with the fact that fumigation of a room after use by a patient suffering from a communicable disease—so called terminal fumigation—is now carried out only after a few diseases. In many cities terminal fumigation has been abandoned and reliance is placed on thorough washing, cleansing and airing, stressing particularly the importance of proper disinfection during the course of the illness. Formaldehyde fumigation, as is well known, is effective in killing bacteria and certain viruses, whereas the sulphur dioxide liberated by the burning of sulphur is relatively valueless in killing the causative agents of the common communicable diseases. Sulphur dioxide is, however, efficient under suitable conditions in the killing of insect life and rodents. It is limited in practical use by its corrosive and destructive action and by its relatively feeble power of penetration. The reliability of sulphur dioxide as a destroyer of the eggs of parasitic insects is still in question.

Because of these disadvantages, sulphur dioxide has been replaced to a large extent on this continent by hydrocyanic acid. There is no question that the latter is the most effective fumigant that we possess, particularly in combatting the infestation of ships with rats and in destroying insect life in industrial plants, such as flour mills, and in greenhouses. It is also the most effective agent for the fumigation of dwelling houses for the purpose of killing insects.

But the use of hydrocyanic acid is fraught with danger. Accidents that have occurred include instances where the operator had apparently not taken adequate precautions to prevent the entrance of persons into the rooms during the procedure, and others where the gas had penetrated into an adjoining room or into adjoining houses or apartments. Newspapers have recorded in Toronto and Montreal during the past year several accidental deaths following this type of fumigation. In June, 1931, provincial regulations were formulated in Ontario for the licensing of operators, with instructions. Each municipality is empowered to pass a by-law regulating fumigation, with instructions for the conduct of the actual procedure. Each applicant for a licence is

required to satisfy the medical officer of health of his municipality as to his competency.

The retention of the gas in water, food, mattresses, cushions and hangings is of such importance that regulations must be formulated with great care and detail. The occurrence of a fatal poisoning in Toronto, following a well conducted fumigation, has emphasized the importance of the danger of retained gas. Instructions have been added to the by-law in Toronto requiring the heating of the air in the room to the maximum temperature during the subsequent airing, and the forcing of air through such articles as pillows and mattresses by some type of mechanical blower. These and other practical points are presented in the excellent article prepared by Senior Surgeon C. L. Williams, of the United States Public Health Service, which appears in this issue.

In a city of 500,000 population the number of fumigations of dwelling houses and apartments is often in excess of 400 a month. This indicates the extent of the problem. Other than hydrocyanic acid no fumigant is available that will meet the need of the varying conditions. The safety of the public lies in legislation and in the strict supervision of those undertaking fumigation. This rests with the municipality. One municipality may take action in time and incorporate in a by-law the essential requirements. Another will delay and leave the way open for tragedies. On the part of every municipality, action is essential in providing the utmost in safeguards.

R. D. Defries.

THE LABORATORY SECTION MEETING

THE holding of a meeting of the Laboratory section during the Christmas vacation, as announced elsewhere in the JOURNAL, is encouraging evidence of the growing importance of the Association. There is no thought on the part of the officers of this section that the holding of such meetings will take the place of the annual convention. It is, rather, an expression of the interest of the members who desire that the section be of as great service as possible. More than sixty-five members have already signified their desire to attend.

The Association welcomes Dr. Veldee, of the United States Public Health Service, who will be the guest speaker through the courtesy of Surgeon General Cumming, and congratulates the section officers on their initiative in arranging this meeting.

LABORATORY SECTION

G. B. REED, PH.D. AND A. L. MCNABB, D.V.Sc.

*The B. Coli Content of Raw and Pasteurized Milk**

A. J. SLACK, PH.C., M.D., D.P.H., AND C. W. MADDEFORD, M.A.

Institute of Public Health, London, Ontario

PUBLIC health authorities are agreed that scientific pasteurization is the only measure yet introduced which can be depended upon to make public milk supplies safe. The consumer is rarely in a position to determine the purity of his milk supply and must rely upon the printed bottle cap as the index to quality. Even the milk laboratory is without any satisfactory test to determine whether or not a milk has been heated to the pasteurizing temperature. Such chemical tests as have been advocated are indefinite and unreliable and it would appear that reliance must finally rest upon more complete data than those which can be obtained by routine bacterial counts and occasional microscopical examinations.

Several investigators have attempted, with varying results, to use the determination of Colon bacilli as an index to proper pasteurization. The work of De Jong and De Graff, confirmed by Ayres and Johnston, Beavens and others, would indicate that there are strains of B. coli capable of surviving a temperature above 145° F. for thirty minutes in milk and that the colon test cannot be used as a true index of proper pasteurization. On the other hand, the work of other investigators, notably Swenarton, indicates that the quantitative estimation of B. coli can be used as an index to proper pasteurization.

We present, herewith, some results on the B. coli content of various grades of milk under market and controlled laboratory conditions. We have been accustomed to assume that most raw milk is contaminated to a greater or lesser extent with Colon bacilli of bovine origin. Our first step was to determine the extent of this contamination in the raw milk from accredited herds. One hundred samples of raw milk from tuberculin-tested herds were plated on standard agar at 37° C. for 48 hours for the total number of bacteria and inoculated into 2 per cent lactose broth in dilutions ranging from 0.0001 cc. to 10 cc. of the milk to test for the presence of Colon bacilli.

Ten per cent of these samples of raw milk had a bacterial count below 5,000 per cc., fifty per cent below 25,000 and eighty per cent below 100,000. Six per cent showed the presence of typical Colon bacilli in 0.0001 cc., thirteen per cent in 0.001 cc., twenty-six per cent in 0.01 cc., forty per cent in 0.1 cc., sixty per cent in 1 cc., seventy per cent in 10 cc. and thirty per cent were free from typical

**Presented before the Laboratory Section, Canadian Public Health Association, at the 21st Annual Meeting, Toronto, May, 1932.*

Colon bacilli in 10 cc. amounts. Inasmuch as these are samples of raw milk bottled by the producer and representing milk as sold to the consumer, the absence of B. coli in 10 cc. amounts in thirty per cent of the samples and a count below 25,000 per cc. in fifty per cent of the samples gives a good indication of the quality of milk which can be produced with reasonable precautions. This milk retails at the same price as the pasteurized product.

TABLE I

B. COLI CONTENT

RAW MILK FROM TUBERCULIN-TESTED HERDS
(100 Samples)

Smallest dilution of sample showing typical Colon bacilli

	Per cent
None in 10 cc.	30
Present in 10 cc.	10
Present in 1 cc.	20
Present in 0.1 cc.	14
Present in 0.01 cc.	13
Present in 0.001 cc.	7
Present in 0.0001 cc.	6
	100

Bacterial count on agar at 37° C. for 48 hours

	Per cent
Below 5,000	10
5,000-25,000	40
25,000-50,000	18
50,000-100,000	12
100,000-500,000	15
500,000-1,000,000	3
Over 1,000,000	2
	100

The next step was to compare the sanitary quality of this milk with that of milk sold to pasteurization plants. Here the producer obtains only the wholesale price for his product and the analytical results indicate a corresponding lesser degree in cleanliness of production. Twenty-five samples were examined with the following results:

TABLE II

B. COLI CONTENT

RAW MILK AS SOLD TO PASTEURIZING PLANTS
(25 Samples)

Smallest dilution of sample showing typical Colon bacilli

	Per cent
Present in 10 cc.	4
Present in 1 cc.	12
Present in 0.1 cc.	12
Present in 0.01 cc.	20
Present in 0.001 cc.	8
Present in 0.0001 cc.	16
Present in 0.00001 cc.	28
	100

Bacterial count on agar at 37° C. for 48 hours

	Per cent
Below 50,000	4
50,000-100,000	16
100,000-500,000	36
500,000-1,000,000	4
1,000,000-5,000,000	28
Above 5,000,000	12
	100

Colon bacilli were present in 10 cc. amounts of all samples, and more than a quarter of the samples showed typical Colon bacilli in dilutions as great as 0.00001 cc. of the milk. Bacterial counts ranged from 45,000 to 13,000,000 per cc. with forty per cent of the samples showing a count above 1,000,000 per cc.

One hundred samples of raw milk, taken from various producers and including the above, were pasteurized in the laboratory at a temperature of 143°-145° F. for thirty minutes. Each

sample was placed in a sterile four-ounce glass stoppered bottle, capped with oiled silk, then completely immersed in a water-bath, the temperature rapidly brought up to 143°-145° F., with the water kept in constant motion by a mechanical stirrer, and held at that temperature for thirty minutes. The samples were removed, and rapidly cooled to 45° F. After cooling, five 10 cc., one 1 cc. and one 0.1 cc. portions of each sample were inoculated into lactose broth fermentation tubes.

After forty-eight hours' incubation at 37° C., sixty-seven of the one hundred samples of laboratory pasteurized milk showed no gas in lactose-broth, using 50 cc. amounts of the milk. Ten samples showed gas in one 10 cc. tube, ten in two 10 cc. tubes, four in three 10 cc. tubes, two in four 10 cc. tubes, and seven in all five 10 cc. inoculations. Therefore, eighty-five out of five hundred 10 cc. inoculations showed gas in lactose-broth, seventy-two inoculations showing 10 per cent or more gas, but in no instance was it possible to obtain a positive eosin-methylene blue plate, many of the plates showing little or no growth even after forty-eight hours' incubation. Endo's plates were used with no better results. From some of these plates we were able to isolate Bacillus polymyxa, a lactose-splitting organism of the Bacillus subtilis group, and consider it a possible cause of fermentation in lactose broth in the absence of typical Colon bacilli. Under the conditions of this laboratory experiment, pasteurization at 143°-145° F. for a period of thirty minutes was sufficient to destroy organisms of the Colon group capable of producing positive Eosin-methylene blue or Endo plates.

In order to compare the results of laboratory and commercial pasteurization, one hundred samples of milk, pasteurized in eighteen different plants, were tested for total bacteria and the presence of B. coli, although in this experiment only one 10 cc. dilution of milk in lactose broth was made.

TABLE III

B. COLI CONTENT

COMMERCIALLY PASTEURIZED MILK AS SOLD TO THE CONSUMER
(100 Samples)

Smallest dilution of sample showing typical Colon bacilli

	Per cent
None in 10 cc.	56
Present in 10 cc.	11
Present in 1 cc.	5
Present in 0.1 cc.	7
Present in 0.01 cc.	9
Present in 0.001 cc.	8
Present in 0.0001 cc.	3
Present in 0.00001 cc.	1
	100

Bacterial count on agar at 37° C. for 48 hours

	Per cent
Below 5,000	22
5,000-25,000	31
25,000-50,000	12
50,000-100,000	13
100,000-500,000	18
500,000-1,000,000	1
Over 1,000,000	3
	100

Fifty-six per cent of these samples showed the absence of typical Colon bacilli in 10 cc. amounts, fifty-three per cent showed a bacterial count below 25,000 per cc., but only thirty-eight per cent showed correlation between the low bacterial count and the absence of B. coli. It was not unusual to find typical Colon bacilli

in samples with a total bacterial count as low as 5,000, while one sample with a count of 8,000,000 bacteria per cc. was free from B. coli in 10 cc. amounts.

A final series of seventy samples of commercially pasteurized milk, collected from eighteen different pasteurizing plants, was plated on agar and inoculated into lactose broth, using five 10 cc., one 1 cc. and one 0.1 cc. dilutions.

TABLE IV

B. COLI CONTENT

COMMERCIALLY PASTEURIZED MILK AS SOLD TO THE CONSUMER
(70 Samples)

Smallest dilution of sample showing typical Colon bacilli

	Per cent
None in 50 cc.	58.6
Present in 50 cc.	8.6
Present in 40 cc.	4.3
Present in 30 cc.	1.4
Present in 20 cc.	4.3
Present in 10 cc.	1.4
Present in 1 cc.	4.3
Present in 0.1 cc.	17.1
	100

Bacterial count on agar at 37° C. for 48 hours

	Per cent
Below 5,000	43
5,000-25,000	18.5
25,000-50,000	14.3
50,000-100,000	7.1
100,000-500,000	15.7
500,000-1,000,000	1.4
	100

This series represents three hundred and fifty 10 cc. inoculations into lactose broth, two hundred and twenty-one of which showed no gas, while gas was present in one hundred and twenty-nine inoculations, one hundred and seven of which showed definitely positive eosin-methylene blue plates. Twenty-two inoculations showing fermentation failed to give positive eosin-methylene blue plates and ten of these showed less than ten per cent gas.

Fifty-eight per cent of these samples were free from typical Colon bacilli in 50 cc. amounts and sixty-one per cent had a bacterial count below 25,000 per cc., comparing favourably with results as obtained under Table III. Many of this last series of samples were collected during a "milk-war," when pasteurized milk was retailing for three cents a pint and five cents a quart. As a result, inspection was particularly rigid. Eighteen dairies were included in the test, four of which consistently produced milk free from Colon bacilli in 50 cc. amounts. Three other dairies, in all tests, produced milk free from Colon bacilli in 40 cc. amounts, and only one of the eighteen dairies failed, at some time during the test, to produce one or more samples showing the absence of typical B. coli in 50 cc. of milk.

Summary and Conclusions

Laboratory methods for the control of pasteurizing plants must be simple enough so that tests can be reported within twenty-four or forty-eight hours. The thermal death point of B. coli closely approaches pasteurizing temperature, isolation of the organism is simple and rapid, and its presence or absence is an index of the sanitary quality of milk. Various investigators show that certain strains of B. coli can be acclimatized to temperatures above 145° F., but it seems logical to assume that acclimatization will not occur in a properly operated plant

where complete steam sterilization follows every run of milk.

The absence of typical Colon bacilli in a given volume of milk does not necessarily indicate proper pasteurization, or even that the milk has been pasteurized at all, but the presence of typical Colon bacilli in small volumes of pasteurized milk indicates some fault in pasteurizing, cooling or bottling which demands investigation and correction. Our results would indicate that milk which shows Colon bacilli in 0.1 cc. amounts is either not being properly pasteurized or is being contaminated subsequent to pasteurization and that when the condition responsible for the presence of Colon bacilli in small amounts is located and remedied, it is not unreasonable to expect that as large amounts as 50 cc. will be free from Colon bacilli.

No attempt has been made to determine the efficiency of commercial pasteurization alone; we have been interested primarily in the quality of the finished product as it is sold to the consumer.

Acknowledgement is made for the hearty co-operation of W. A. Gill, V.S., Food and Dairy Inspector of the City of London, without whose assistance this investigation would have been impossible; also to L. P. Cleland for valuable assistance in the laboratory.

FOOD, DRUGS AND NUTRITION

H. M. LANCASTER, B.A.Sc., and E. W. MCHENRY, M.A., Ph.D.

Nutritional Studies in Brantford, Ontario

THE following observations are the result of an inquiry in Brantford into the adequacy of the diets associated with a municipal relief programme. The subject was approached from two angles: one, an investigation to determine whether or not there was an increase in the number of children presumably suffering from malnutrition; the second, an investigation of the caloric needs of representative dependent families, and an attempt to determine how effectively the food supplied met such needs.

As regards the inquiry into undernourishment among school children, it was found that 7.3 per cent of the children were 10 per cent or more underweight for their height and age. Weight charts are kept of all pupils in every class of every school in the city. Pupils are weighed monthly by the teachers and the weights recorded. The percentage found in previous years were as follows: 1925, 8.4 per cent; 1926, 6.1 per cent; 1927, 9.3 per cent; 1928, 8.5 per cent; 1929, 8.8 per cent; 1930, 9.8 per cent; and 1931, 7.2 per cent. The figure for 1932, 7.3 per cent, compares favourably with the average for the last eight years, which was 8.1 per cent. It would appear, therefore, that the undernourishment found had little

relation to the economic conditions and that probably lack of adequate hours for rest and sleep plays the most important part. Diseased tonsils, adenoids, teeth, etc., are also important factors.

It was further found that there was a marked difference between the number of children rated as being nutritionally below normal in some schools and those in attendance at other schools. Thus Riverview School (primary, first and second books only) had 21.6 per cent; Victoria, 13.6 per cent; Graham Bell, 13.5 per cent; Bellview, 11.9; Dufferin, 10.6; King Edward, 5.9; Ryerson, 5.8; Central, 5.5; Alexandra, 5.2; Major Ballachey, 4.8; St. Mary's, 3.5; St. Basil's, 2.7; St. Ann's, 2.3; and King George, 1.5 per cent.

The study of the dietary needs of the investigated families was carried on with the aid of the domestic science teacher and the dietician from the local hospital, who were placed at the disposal of the local health department. The agency supplying local relief provided a list of representative families receiving such relief. In view of the fact that many of these families were not solely dependent upon the social agency for all of the supplies received the investigating group found it difficult to get an accurate list of the food obtained, in terms of quantity. This difficulty was later overcome, and it was possible for the dieticians to discuss with some forty-two families their food requirements and their preparation. The investigators reported a tendency on the part of housewives to purchase too large quantities of sugar and other carbohydrate foods. Fresh vegetables and milk were found to be markedly lacking in practically all of the diets. It was further shown that, while in many instances the caloric requirements were not being adequately met, there was no apparent appreciation of this inadequacy by the families themselves.

Report to the Finance Committee of the City Council of Brantford, July, 1932—C. C. Alexander, M.D., *School Medical Officer*, and Will L. Hutton, M.D., *Medical Officer of Health*

REPORTED CASES OF CERTAIN COMMUNICABLE DISEASES IN CANADA* BY PROVINCES—OCTOBER, 1932.

Diseases	P.E.I.	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
Diphtheria	—	6	13	144	104	32	34	2	—
Scarlet Fever	1	20	52	298	229	76	67	22	87
Measles	1	27	19	183	839	43	3	216	175
Whooping Cough	—	7	—	377	320	88	24	14	59
German Measles	—	—	—	20	4	†	1	6	3
Mumps	—	—	—	26	226	11	7	2	42
Smallpox	—	—	—	—	1	1	—	—	—
Cerebrospinal Meningitis	—	—	1	4	6	—	—	—	—
Anterior Poliomyelitis	1	1	5	126	59	—	2	9	—
Typhoid Fever	—	11	20	123	91	16	23	8	2
Trachoma	—	—	—	—	1	11	2	—	76

*Data furnished by the Dominion Bureau of Statistics, Ottawa.
†Not reportable.

PUBLIC HEALTH ENGINEERING

T. J. LAFRENIÈRE, C.E., AND A. E. BERRY, M.A.Sc., C.E., PH.D.

NEW ENGINEERING ORGANIZATION FORMED

A NUMBER of municipal officials met at the Royal York Hotel, Toronto, on December 14th, at the request of the Ontario Department of Health. The meeting was called for the purpose of discussing the organization in Canada of some group which would be interested in sewage treatment and allied subjects. Representatives to the total of nearly 30 were present from a number of municipalities in Canada. After a thorough discussion it was decided to organize and an executive committee of the following was appointed:

Chairman—R. C. Harris, Commissioner of Works, City of Toronto.

Vice-Chairman — W. M. Veitch, City Engineer, London, Ontario.

Secretary-Treasurer—A. E. Berry, Ontario Department of Health, Toronto.

Trustees—G. H. Ferguson, Chief Engineer, Department of Pensions and National Health, Ottawa; Grant R. Jack, Commissioner of Works, Township of East York, Toronto.

The executive committee has been given authority to draw up a constitution, and to deal with such matters as a name for the organization, fees, date of convention, affiliation with other groups, and allied subjects.

It was agreed by the meeting that the new association should interest itself primarily in sewerage matters, and such other related activities as may from time to time be decided upon. From the interest manifested at this meeting there is reason to believe that this new organization will find a valuable place in Canada, and that regular conventions will be a feature, with representation from those interested in the design, operation or administration of sewerage works and other sanitary works apart from waterworks systems.

NEW SEWERAGE SYSTEM FOR AURORA, ONTARIO

THE official opening of the new sewerage system at Aurora, Ontario, took place on December 3rd. This marked an important step in the town's development. The system was inagurated early in the year, and pushed forward as a relief measure. It comprises a complete layout of sewers, and an activated sludge disposal plant. The wastes from a tannery in the town are to be discharged to the plant. This will offset complaints which have been made from time to time concerning the pollution of the stream. The plant is a modern one and has a presettling tank followed aeration, final settling and glass covered drying beds. The town is to be congratulated on the completion of these works.

EAST YORK SEWERAGE EXTENSIONS

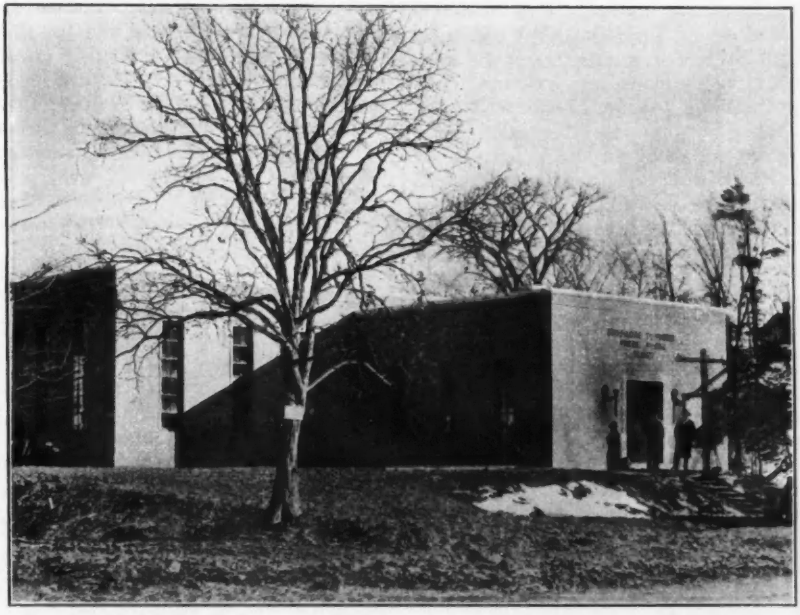
THE completion of additions to the two sewage disposal plants in the Township of East York is to be climaxed by an official opening, set for December 20th. These two sewage works have been in service for about six years, and increases in population have necessitated extensions. Additional settling capacity and sludge handling have been provided. The plants will now be in a position to treat the entire flow of sewage without difficulty.

ETOBICOKE WATER SOFTENING PLANT

NOVEMBER 16th witnessed the opening of the new water plant for Etobicoke Township, Ontario, when Reeve Gardhouse officiated. The guests, including councillors and officials from neighbouring municipalities, then proceeded to the Royal York Golf Club, where dinner was served. The municipality was warmly

complimented on the successful outcome of their programme.

The new plant was described in an earlier issue of the JOURNAL. The water is secured from two deep wells and is softened and the iron removed in this plant. This is the first plant of its kind to be installed on a municipal water supply in Canada. The



THE NEW WATER SOFTENING AND IRON REMOVAL PLANT IN THE TOWNSHIP OF ETOBICOKE.

softening and iron removal are accomplished by natural zeolite. The complete cost for wells and treatment is about $50,000. W. H. Walker, Township Engineer, was in charge of the entire programme.

MONTREAL SEWERAGE

THE City of Montreal is faced with heavy expenditures for trunk sewers. Programmes have been developed with an estimated expenditure approaching ten million dollars. These trunk sewers will carry the sewage to points where less difficulty will be experienced in disposal. No announcement has been made regarding treatment of the sewage. Any disposal required is likely to be of a partial nature only.

PUBLIC HEALTH ENGINEERING IN OTHER COUNTRIES

IT is of more than passing interest to note the activities along lines of public health engineering in certain other parts of the world.

In 1931, Jamaica obtained the services of a sanitary advisor to clear up problems connected with water-supply and sewage disposal. During the same year Greece obtained the services of a technical advisor in sanitary matters connected with rural water supply and sewage disposal in two areas in which malaria field stations were in operation. In China, the National Health Administration is developing a Department of Public Health Engineering at Nanking. The State of Mysore in India created a

Bureau of Sanitary Engineering, while in Egypt a Division of Sanitary Engineering is being established by the Department of Public Health.

MIMICO SEWAGE DISPOSAL PLANT

THE new sewage disposal plant at Mimico, Ontario, was officially opened on Saturday, November 12th, when J. Earl Lawson, M.P., set the machinery in motion. This was followed by a luncheon in Connaught Hall at which guests from the surrounding municipalities extended congratulations to the Union Sewerage Commission on the successful completion of their project. This is an activated sludge plant with a designed capacity of 4 million gallans a day. It will serve the towns of Mimico and New Toronto, as well as a section of Etobicoke Township. The new plant is built on the site of the old works which were erected in 1916, and part of the original structure is used for the new one. The old plant was first an Imhoff tank and later a sprinkling filter unit, with brush-wood as the medium, was added. The effluent was discharged into Lake Ontario through an outfall extending about 700 feet from shore. The new activated sludge plant employs the old Imhoff as a preliminary settling tank. Sludge digestion is also to be used and for this purpose a tank with a floating cover has been built. This is the first floating cover unit to be installed in Ontario. The sludge will be dried on two glass covered beds, one of which was in use at the old plant, and the other was built by converting the old sprinkling filter unit. The plant was carried through as an unemployment project, and the cost was approximately $150,000.

CHRISTMAS SEAL SALE

CANADIAN TUBERCULOSIS ASSOCIATION

MANY of the services utilized in the prevention of tuberculosis throughout Canada have been made available through funds raised by local committees in their Christmas Seal Sale campaigns, conducted with the assistance of the Canadian Tuberculosis Association. Ninety per cent of the money raised in this effort remains in the locality in which it has been contributed, while the other ten per cent is forwarded to the office of the Canadian Tuberculosis Association to cover the cost of seals, envelopes, letterheads, advertising material, etc., as provided by the Association. Funds from the sale of seals are used entirely for preventive work. Diagnostic chest clinics, the support of visiting nurses, health camps for children, tuberculosis surveys and X-ray equipment are some of the activities supported by Christmas Seal funds. The total amount raised by this effort throughout Canada last year was $142,550, this figure being slightly lower than the total for the previous year. It is hoped that this year's total will equal, if not exceed, that of last year.

"THE GOOD THEY DO DEPENDS ON YOU"

NEWS AND COMMENTS

"In Times Like These"

THE Canadian Council on Child and Family Welfare is to be thanked for the preparation of a handbook of forty-eight pages, with three supplements, bearing the title "In Times Like These," and designed for the use of social agencies dealing with unemployment and relief conditions.

The main booklet deals with the problems of an organization within the community along both public and private lines, the division of work between these agencies, and the organization of the actual relief machinery in the small and in the larger community. The first supplement deals with the organization for relief, including food, fuel, clothing, rent, etc. The second supplement presents the organization of special services—the homeless man, the ex-service man, the unemployed woman. The third supplement outlines the organization of relief programmes.

The handbook and the supplements are available from the Council office, Ottawa, at fifteen cents for the complete set.

School of Nursing University of Toronto

ANNOUNCEMENT has been made of the establishing of a School of Nursing in the University of Toronto. The School will provide co-ordination of all courses in nursing hitherto given by or in connection with the University. The Department of Public Health Nursing of the University will be discontinued and included in the new School. This undertaking is made possible through a grant from the Rockefeller Foundation, to be made yearly for five years.

The School, which will be housed in the building at No. 7 Queen's Park, will be under the direction of Miss E. Kathleen Russell.

British Columbia

IN the November issue of the JOURNAL, the infant mortality rate in Vancouver for the year 1931 was inadvertently given as 64.3. The report issued by the Dominion Bureau of Statistics gives the rate as 42.3, which is the lowest quoted.

The following changes in medical health officers have been made: Dr. T. J. Norman, Robson and district; Dr. R. A. Yeld, Edgewood and district; Dr. H. F. P. Grafton, Williams Lake and district; Dr. P. M. Wilson, Britannia Beach; and Dr. A. E. Bennett, Ocean Falls.

Manitoba

DR. J. A. GUNN was elected chairman and C. E. Corrigan secretary of a clinical provincial-wide organization to be formed at the suggestion of the Cancer Relief and Research Institute for the purpose of improving the care of those afflicted with cancer. As a result of the new organization it is hoped that in the not too distant future a more standardized form of the best therapeutic measures suited to the different types of cancer may be evolved.

Ontario

PRACTICAL use has been made of the July issue of the JOURNAL recounting a recent outbreak of milk-borne paratyphoid fever in the sending of copies to fifty dairy firms in the city by the Department of Public Health, Toronto.

Nova Scotia

ANNOUNCEMENT has been made by the Hon. Dr. G. H. Murphy, Minister of Health, of the appointment of a committee of leading physicians and surgeons to study the cancer problem in Nova Scotia with a view to initiating a definite provincial-wide programme.

DR. WILLIAM BARTLETT BREBNER

IT was with deep regret that the many friends of Dr. William Bartlett Brebner learned of his death in New York on November 9th. Although only twenty-nine years of age, he had already distinguished himself as a scientist. He was a member of the Bureau of Laboratories, Department of Health, New York City, being engaged in research studies in poliomyelitis and in charge of the Department of Bacteriology in the New York University.

Following his graduation from the University of Toronto in 1926, he was engaged in research studies in that university, later proceeding to Washington University, St. Louis, where he commenced his studies on poliomyelitis. It was in the course of his research work in New York that he was stricken with an obscure type of paralysis following the biting of his hand by a monkey. Expressions of appreciation of the very high quality of his character and work by Dr. W. H. Park of New York, and by others closely associated with him in that city and in St. Louis and Toronto, have brought a deeper sense of the great loss which the profession has suffered in his death.

Dr. Brebner was born in Toronto and was the son of the late Dr. James Brebner, former Registrar of the University of Toronto. He is survived by his widow, formerly Miss Mildred Davidson; his brother, Professor J. Bartlett Brebner, of Columbia University; and by a sister, Mrs. Mary Strong, of Toronto.

DR. FRANK HARTON PRATTEN

DR. FRANK HARTON PRATTEN, for the past thirteen years medical superintendent of the Queen Alexandra Sanatorium at Byron, Ontario, died at his residence on December 10th. He had not been in good health during the past year.

Dr. Pratten was born in Waterford, Ontario, the son of the late Mr. and Mrs. George Pratten, and was a graduate of the Faculty of Medicine of the University of Toronto, being a member of the class of 1911. He was a member of the Canadian Army Medical Corps, joining at the commencement of the war. In 1917 Dr. Pratten was appointed officer in charge of medicine at the Canadian special hospital for diseases of the chest at Lenham, Kent. He was a Fellow of the American College of Physicians, and of the Royal College of Physicians (Canada).

Shortly after demobilization, Dr. Pratten became medical superintendent of Queen Alexandra Sanatorium. He possessed richly the qualities of leadership, which were evidenced by the remarkable growth and success of the institution he guided, and a keen clinical judgment which placed him in the forefront of specialists in the treatment of tuberculosis.

He is survived by his widow, by his son, Frank, and his daughter, Jane. To them the Association expresses its deep sympathy.

Books and Reports

D. T. Fraser, B.A., M.B., D.P.H.; R. R. McClenahan, B.A., M.B., D.P.H.

Fungous Diseases. *A clinical-mycological text by Harry P. Jacobson, M.D., Jay Frank Schamberg, M.D., and Howard Morrow, M.D. Publisher, Charles C. Thomas, 220 East Monroe Street, Springfield, Ill.,* 1932. 317 *pages. Price* $5.50.

Dr. Jacobson's book, "Fungous Diseases," is one that will prove most welcome to physicians, and especially to dermatologists who are interested in the various manifestations of myotic infection. There has been a great need for such a text.

There are nine chapters: *Dermatomycoses, Moniliasis, Maduromycosis, Sporotrichosis, Blastomycosis, Actinomycosis, Coccidioides, Torulosis* and *Aspergillosis.* The mycologic studies of the various species are thoroughly described. Chapter two, *Dermatomycoses,* gives four tables in which the fungi are classified. The fungi described in detail are the Microspora, the Trichophyta, the Epidermophyta and the Achoria. The tables are so divided as to give the type species, the variant species, the morphology of growth, the location of lesions on the skin arising from the various species, and the results of guinea pig inoculation.

The chapter on laboratory technique for the isolation and cultivation of fungi describes the best method of demonstrating the parasite in hair, skin, or nails. The formulae for Sabouraud's differentiation and conservation media are recorded and the statement is made that the technique for inoculating the media with the infected material is similar to that employed in bacterial infections; though it is advisable to free bacterial infection by first washing the material in 75 to 95 per cent alcohol.

The paragraph on treatment in the chapter describing dermatomycoses is illustrated by photographs of lesions on the feet, the hands, the nails and the general body surface. The treatments described are similar to those found in standard books of dermatology.

The book is well worth having, especially for the dermatologist interested in cultivating and isolating fungi. The author has carefully recorded his findings and one feels most grateful to him. H. A. Dixon.

Classic Descriptions of Disease. *By Ralph H. Major, M.D. Publisher, Charles C. Thomas, Springfield, Ill.,* 1932. 630 *pages, with* 127 *illustrations. Price* $4.50.

In this volume of 630 pages, the author has gathered together classic accounts of disease and biographical sketches of some of those whose names form an essential part of medical lore and literature, from Hippocrates to Banting and Minot. The author says, in his preface:

"The selections are chosen because of their interest in being either the first known, one of the earliest, or one of the most interesting accounts of the disease in question. Some sections of the book are so sparsely represented that they seem inadequate, while others seem so fully represented as to be almost overdone. This is inevitable, however, since some dis-

eases have more interesting and more extended histories than others, and also because of personal taste, or bias, if you will, in the selection of authors.

"In the sections on infectious diseases one misses an account of the discoveries of Koch, Schaudinn, Kitasato, Bordet, Wasserman, and of that many-sided genius, Edwin Klebs, who saw the typhoid bacillus before Eberth, the diphtheria bacillus before Löffler, and who inoculated monkeys with syphilis before Metchnikoff. Such discoveries belong, however, to the field of bacteriology, and these selections deal in the main with clinical medicine. The subject of therapeutics has not been included except in a few instances, where they seemed to round out unusually well the history of the disease in question. Neurological selections have been omitted for the reason that their interest and number are sufficient to form an independent series."

As the author has intimated in his preface, one may not agree with his selection. One misses not only those he has indicated, but others. Why not have included Pasteur, Budd, Löffler, Behring, Roux, Pirquet, Panum, Theobald Smith and, most of all, Jenner? True, these were not wholly clinical, but their work surely must be taught in clinical medicine. But perhaps another volume on these will come, as complete yet concise, as well illustrated and as interesting as this one. It, too, would be welcome.

The collection, including the translation, has been a monumental task which only one deeply interested in medical history and well qualified to delve therein could have undertaken. The volume is worthy of the effort and will form a ready reference work.

The printing is excellent. The illustrations are well chosen and beautifully produced and add very much to the value of the book.

N. E. McKINNON.

Quarterly Bulletin of the Health Organisation. *Volume I, Numbers* 1, 2 *and* 3 (*March, June and September*). *Published by the League of Nations, Geneva,* 1932. *Canadian agents, League of Nations Society in Canada,* 389 *Wellington Street, Ottawa. Annual Subscription,* $2.00.

The appearance of this new *Bulletin* is welcomed by all who are familiar with the work of the Health Organization. In an introductory editorial it is pointed out that those who wished to follow the work of the Organization have been obliged to consult the various documents, such as the records of the international conferences, the minutes of committees, annual reports, etc. In order to make this material more accessible and, consequently, more widely known, the *Quarterly Bulletin* has been undertaken. The *Bulletin* will contain reports of the various technical commissions appointed to study the following problems: tuberculosis, venereal diseases, health of the school age child, medical education, malaria, ship fumigation, cancer, rabies and opium.

Fifteen articles have been published in the first three numbers. They include such subjects as immunization against diphtheria, milk supply of North American cities, medical education in England, France and Germany, fumigation of ships and an extensive report, "The Economic Depression and Public Health," with special reference to Europe.